

What is claimed is:

1. A microscope system comprising:

a control means capable of generating electric control signals;

a spatial modulator means having an illuminated surface to be illuminated by light emitted by a light source, and capable of receiving the electric control signal and of spatially modulating reflection characteristic or transmission characteristic of the illuminated surface by a spatial frequency specified by the electric control signal;

an illuminating optical means for illuminating a specimen with light spatially modulated by the spatial modulator means;

an image detecting means for detecting a signal image formed by signal light emitted by the specimen illuminated by the illuminating optical means; and

an arithmetic means for processing signal images formed by using the spatial frequency of at least three different phases set by the control means and detected by the image detecting means to obtain an optical sectioned image.

2. The microscope system according to claim 1, wherein the control means is capable of setting a thickness for the optical sectioned image by setting the spatial frequency.

3. The microscope system according to claim 1, wherein the control means is capable of dividing the illuminated surface of the spatial modulator means into a plurality of regions and of setting spatial frequencies for the individual regions.

4. The microscope system according to claim 3, wherein the plurality of regions determined by dividing the illuminated surface correspond to divisional observation regions whose optical sectioned images need to be formed in different thicknesses, respectively.

5. The microscope system according to claim 3 further comprising a monitoring means having a monitor screen capable of displaying signal images respectively corresponding to the plurality of regions of the illuminated surface.

6. The microscope system according to claim 1, wherein the spatial modulator means is a digital micromirror device, and the illuminated surface is formed by arranging a plurality of micromirrors.

7. The microscope system according to claim 1, wherein the spatial modulator means is a liquid crystal device, and the illuminated surface is formed by arranging a plurality of liquid crystal cells.

8. The microscope system according to claim 1, wherein the spatial modulator means receives the electric control signal and is capable of sinusoidally spatially modulating the reflection characteristic or the transmission characteristic of the illuminated surface according to the electric control signal.

9. The microscope system according to claim 1, wherein the signal light is reflected light, transmitted light or fluorescent light.